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Determinants of Micro-embolic Signals in Patients with Atherosclerotic Plaques of the Internal Carotid Artery

Telman G., Kouperberg E., Hlebtovsky A., Sprecher E., Hoffman A., Beyar R. Eur J Vasc Endovasc Surg 2009;38:143-7.

Background and purpose: This study aimed to investigate the embolic potential of carotid plaques, employing both the presence and the rate of micro-embolic signals (MESs), based on the presence and timing (current or past) of symptoms, degree of stenosis and ultrasonic characteristics of plaques.

Methods: We used the transcranial Doppler (TCD) to monitor MES and the Doppler ultrasound to classify carotid plaques in newly symptomatic (acute stroke or transient ischaemic attack (TIA)), formerly symptomatic (relevant stroke or TIA per anamnesis) and asymptomatic patients with internal carotid artery (ICA) stenosis.

Results: Stroke-related arteries evidenced a significantly greater presence of MES than the TIA-related and asymptomatic arteries ($p = 0.04$), with no significant difference found between the latter two groups (stroke: 42/90, 46.7%; TIA: 15/49, 30.6%; asymptomatic: 40/130, 30.8%). Adjustment for anti-platelet treatment did not change this finding. The degree of stenosis, ultrasonic characteristics of texture and the density of plaques were not found to be associated with the presence or quantity of MES.

Conclusion: MESs are present significantly more often in stenosed, stroke-related carotid arteries as compared with TIA-related or asymptomatic arteries. Neither the ultrasonic characteristics nor the degree of stenosis were found to influence the presence or rate of MES.

Association between White Matter Ischaemia and Carotid Plaque Morphology as Defined by High-resolution In Vivo MRI

Patterson A.J., U-King-Im J.M., Tang T.Y., Scoffings D.J., Howarth S.P.S., Graves M.J., Gillard J.H. Eur J Vasc Endovasc Surg 2009;38:149-54.

Objectives and design: Both carotid plaque morphology and severity of white matter ischaemia (WMI) have been shown to be independent predictors of stroke risk. This study tests the hypothesis that there is an association between carotid plaque morphology as determined by high-resolution carotid MRI and WMI.

Materials and methods: Forty patients (80 arteries) with at least 40% stenosis on screening Doppler ultrasound were recruited and underwent high-resolution axial carotid MRI at 1.5 T. In a blinded manner, plaque characteristics such as lipid core, fibrous cap, intraplaque haemorrhage, lumen area, plaque area, and American Heart Association (AHA) classification were qualitatively and quantitatively evaluated. The severity of WMI was independently quantified using a modified Scheltens score based on standard brain Fluid-Attenuated Inversion Recovery. Linear mixed effect models were used to test if carotid plaque characteristics could independently predict severity of WMI.

Results: Hypertension ($p = 0.005$) and previous a history of transient ischaemic attack or stroke ($p = 0.038$) were found to be significant predictors of severity of WMI. After accounting for confounding variables, no significant association was found between the modified Scheltens score and lipid core size ($p = 0.122$), fibrous cap status ($p = 0.991$), intraplaque haemorrhage ($p = 0.708$), plaque area (0.835), lumen area (0.371) or an AHA Type VI complex plaque ($p = 0.195$).

Conclusions: Carotid plaque morphology as defined by MRI does not independently predict severity of WMI.

Present and Future of Branched Stent Grafts in Thoraco-abdominal Aortic Aneurysm Repair: A Single-centre Experience

Verhoeven E.L., Tielliu I.F., Bos W.T., Zeebregts C.J. Eur J Vasc Endovasc Surg 2009;38:155-61.

Background: Recent developments with fenestrated and branched stent grafts have opened the way to treat complex aortic aneurysms involving the visceral arteries. Early reports on endovascular treatment of thoraco-abdominal aneurysms have demonstrated the feasibility of the technique. Given the sparse literature, its safety has not been established yet.

Methods: A literature review was conducted, and the results of our own series of 30 patients treated with a custom-made Zenith device with fixed branches are presented. Most of the patients were refused open surgery mainly for the extent of the disease combined with co-morbidity, which included in most patients a combination of several risk factors. The mean aneurysm size was 70 mm and the extent of the aneurysm was type I in eight cases, type II in five, type III in 12 and type IV in five patients.

Results: Technical success in our series was achieved in 93% (28/30). Two out of 97 (2%) targeted vessels were lost. In one patient, a renal artery ruptured during insertion of the bridging stent graft. In a second patient, a coeliac artery could not be catheterised and was lost. The 30-day mortality was 6.7% and corroborated with 5.5% in the largest series reported so far. The 6 months and 1-year survival were 89.3% and 76.0%, respectively.

Conclusion: The results of fully endovascular repair of selected thoraco-abdominal aneurysms are promising. A learning curve should be expected. Anatomical limitations such as extremely tortuous vessels and access problems should be taken into account, as well as the quality of the targeted side branches. Although longer-term results need to be awaited, it is likely that endovascular repair of thoraco-abdominal aneurysms will become a preferential treatment option for many patients in the future.

An Emergency Visceral Hybrid Procedure for Ruptured Thoraco-Abdominal Aortic Aneurysms

von Meyenfeldt E.M., Schnater J.M., Reekers J.A., Balm R.. Eur J Vasc Endovasc Surg 2009;38:162-8.

Rupture of a thoraco-abdominal aortic aneurysm (TAAA) is usually lethal. Patients with contained ruptures, who reach the hospital, have traditionally been subjected to open reconstructive surgery. However, especially in older patients, open surgery has a high mortality and morbidity rate. Visceral hybrid procedures (VHPs) can provide an alternative in this high-risk patient group. We present a literature review of VHPs with a focus on acute TAAAs.

A 10-year Experience of Using Femoro-popliteal Vein for Re-vascularisation in Graft and Arterial Infections

Ehsan O., Gibbons C.P. Eur J Vasc Endovasc Surg 2009;38:172-9.

Background: Infected prosthetic grafts and mycotic aneurysms carry a high mortality and morbidity rate, with a substantial risk of persistent graft infection, but there is evidence that this can be minimised by using femoro-popliteal vein for arterial reconstruction after debridement and graft excision. We present our 10-year experience of this technique.

Methods: Forty-six patients underwent 48 arterial reconstructions with femoro-popliteal vein (24 aortic). Six had mycotic aneurysms (three aortic) and 40 had graft infections (16 aortic).

Results: There were two early postoperative deaths (4.3%) and two patients with pre-existing ischaemia underwent major amputation despite a patent graft. Median follow-up was 4.1 years (range: 2 months to 10 years). Patient survival was 70% and limb salvage 96% at 5 years. Primary graft patency was 75% and 62% and secondary patency 93% and 91% at 2 and 5 years, respectively. Two patients required further surgery for recurrent infection. Anastomotic or graft stenosis occurred in 11 patients (24%). There were three major wound infections. Donor-limb swelling was transient.

Conclusion: For arterial and prosthetic graft infections, femoro-popliteal vein is an excellent conduit for vascular reconstruction after drainage and debridement of infected tissue and graft material under antibiotic cover, providing good long-term survival and limb salvage.

Iliac Artery Compression in Cyclists: Mechanisms, Diagnosis and Treatment

Lim C.S., Gohel M.S., Shepherd A.C., Davies A.H. Eur J Vasc Endovasc Surg 2009;38:180-6.

Objectives: To review the mechanisms, diagnosis and treatment options for symptomatic iliac artery compression in cyclists.

Methods: Pubmed, Medline, Embase and Google were searched using combinations of the terms 'iliac artery disease', 'iliac artery compression', 'iliac artery stenosis', 'cyclists' and 'athletes'.

Results: Tethering of the iliac artery by the psoas arterial branch and fibrous tissue, and muscular hypertrophy predispose the vessel to kinking and compression during cycling. Symptoms may only be present on maximal exercise in the cycling position. Provocative exercise tests using a cycling ergometer with ankle brachial pressure index measuring has a sensitivity of 85% to detect arterial insufficiency. Magnetic resonance imaging is increasingly being used as the investigation of choice to confirm the diagnosis,